

CLAIMS

1. A low-friction sliding mechanism wherein a low-friction agent composition is interposed between sliding surfaces of a
5 DLC coated sliding member (A) and a sliding member (B), characterized in that

the DLC coated sliding member (A) is formed by coating diamond-like carbon on a base material;

10 the sliding member (B) is formed with at least one kind of material selected from a group consisting of a metal material, a non-metal material and a coated material obtained by coating a thin film on a surface of the metal material or the non-metal material; and

15 the low-friction agent composition contains at least one kind selected from a group consisting of an oxygen-containing organic compound (C) and an aliphatic amine compound (D).

2. The low-friction sliding mechanism according to claim 1, characterized in that, in the sliding member (B), the metal material
20 is at least one kind of material selected from a group consisting of a ferrous material, an aluminum alloy material and a magnesium alloy-based material; and the coated material is formed by coating a thin film of at least one kind of material selected from a group consisting of DLC, TiN and CrN.

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3. The low-friction sliding mechanism according to claim 1 or 2, characterized in that the coated DLC has a hydrogen content of 20 atomic percent or less.

30 4. The low-friction sliding mechanism according to claim 1 or 2, characterized in that the coated DLC has a hydrogen content of 10 atomic percent or less.

5. The low-friction sliding mechanism according to claim 1 or 2, characterized in that the coated DLC has a hydrogen content of 0.5 atomic percent or less.
- 5 6. The low-friction sliding mechanism according to claim 1 or 2, characterized in that the coated DLC is made of a-C diamond-like carbon that does not contain hydrogen.
- 10 7. The low-friction sliding mechanism according to any one of claims 1 through 6, characterized in that the oxygen-containing organic compound (C) is at least one kind selected from a group consisting of alcohols, carboxylic acids, esters, ethers, ketones, aldehydes, carbonates and derivatives thereof.
- 15 8. The low-friction sliding mechanism according to any one of claims 1 through 7, characterized in that the oxygen-containing organic compound (C) is contained in the range of 0.05 to 3.0% relative to a total amount of the low-friction agent.
- 20 9. The low-friction sliding mechanism according to any one of claims 1 through 8, characterized in that the aliphatic amine compound (D) has a hydrocarbon group having 6 to 30 carbon atoms and is contained in the range of 0.05 to 3.0% relative to a total amount of the low-friction agent.
- 25 10. A method of friction reduction characterized in that, on sliding surfaces formed of a DLC coated sliding member (A) formed by coating diamond-like carbon and a sliding member (B) that uses at least one kind of material selected from a group consisting of a metal material, a non-metal material and a coated material obtained by coating a thin film on a surface of the metal material or the non-metal material,
- 30 one that contains at least one kind selected from a group

consisting of an oxygen-containing organic compound (C) and an aliphatic amine compound (D) is supplied as a low-friction agent composition to lubricate.

5 11. A low-friction agent composition that is used in the low-friction sliding mechanism according to any one of claims 1 through 9 or the friction reduction method according to claim 10, characterized by containing
at least one kind selected from a group consisting of an
10 oxygen-containing organic compound (C) and an aliphatic amine compound (D).

12. A manual transmission characterized by using the low-friction sliding mechanism according to any one of claims
15 1 through 9.

13. A final reduction gear unit characterized by using the low-friction sliding mechanism according to any one of claims
1 through 9.

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